

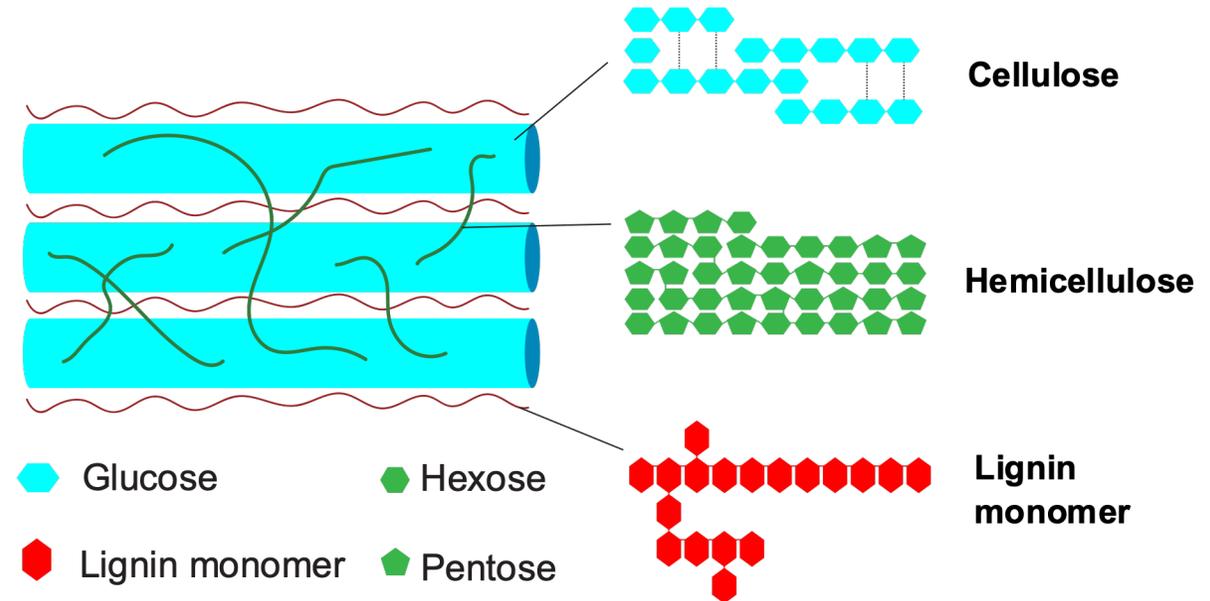
Using Extremophile Enzymes to Improve Agricultural Waste Valorization

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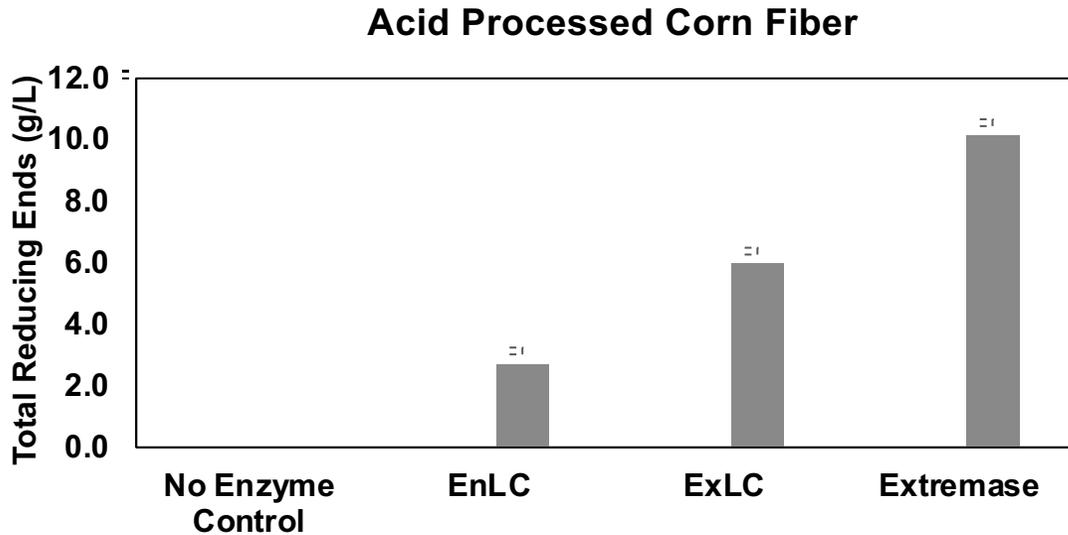
Agricultural biomass is a rich source of sugars

- Agricultural biomass is predominantly composed of cellulose, hemicellulose, and lignin
 - Cellulose is a source of glucose
 - Hemicellulose is a source of mixed hexoses and pentoses
 - Lignin is highly resistant to degradation, susceptible to acid treatment



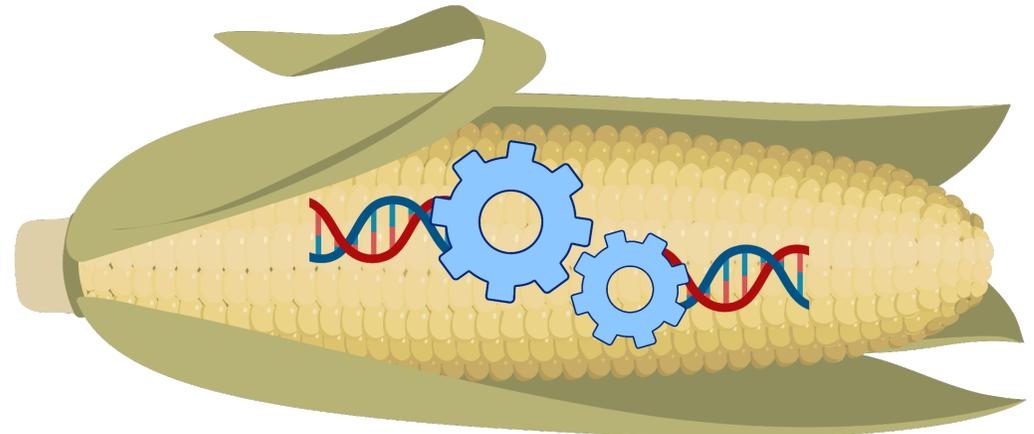
Crop	Cellulose (%)	Hemicellulose (%)	Lignin (%)
Corn fiber	18	43	39
Almond Shells	39	29	29
Soybeans	67	31	2

Leveraging temperature and pH specifications



Soybean Lipid Yield Fold Increase		
	Water Treated	Acid Treated
Liquid Fraction	3.52	6.8
Solid Fraction	1.56	1.98

	Conventional cellulase	Extremase
Operating Temperature	50-65°C	21-95°C
Operating pH	4.0-5.0	2.5-6.0
Inactivating Temperature	>70°C	>100°C
Inactivating pH	<3.9 or >7.0	>7.0



THANK YOU!



Dr. Nicole Buan



Dr. Paul Blum

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Alicia Ortiz
Morgan Price
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